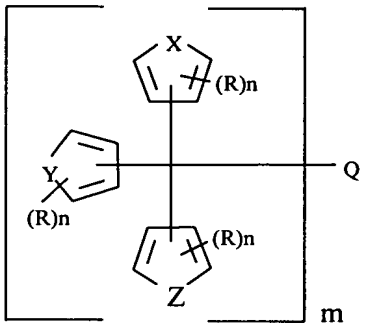
CLAIMS

What is claimed is:

1. A method for deterring, inhibiting, preventing or reversing stenosis, restenosis or unwanted proliferation of cells in blood vessel walls or other anatomical structures of a human or veterinary patient, said method comprising the step of:

administering to the patient a therapeutically effective amount of a compound having the structural formula



Wherein,
X,Y and Z are same or different and are independently selected from CH2, O, S, NR_1, N=CH, CH=N and R_2-C=C-R_3, where R_2 and R_3 are H or may combine to form a saturated or unsaturated carbocyclic or heterocyclic ring, optionally substituted with one or more R groups;

R_1 is selected from H, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, acyl and aroyl, optionally substituted with hydroxy, amino, substituted amino, cyano, alkoxy, halogen, trihaloalkyl, nitro, thio, alkylthio, carboxy and alkoxycarbonyl groups;

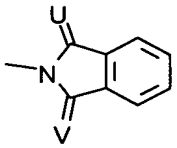
R is selected from H, halogen, trihaloalkyl, hydroxy, acyloxy, alkoxy, alkenyloxy, thio, alkylthio, nitro, cyano, ureido, acyl, carboxy, alkoxycarbonyl, N-(R_4)(R_5) and saturated or unsaturated, chiral or achiral, cyclic or acyclic, straight or branched hydrocarbyl group with from 1 to 20 carbon atoms, optionally substituted with

hydroxy, halogen, trihaloalkyl, alkylthio, alkoxy, carboxy, alkoxycarbonyl, oxoalkyl, cyano and N-(R_4)(R_5) group,

R_4 and R_5 are selected from H, alkyl, alkenyl, alkynyl, cycloalkyl and acyl or R_4 and R_5 may combine to form a ring, wherein a carbon may be optionally substituted by a heteroatom selected from O, S or N-R_6,

R_6 is H, alkyl, alkenyl, alkynyl, cycloalkyl, hydroxyalkyl or carboxyalkyl,

n is 1-5; m is 1 or 2; with the proviso that
when m is 1, Q is selected from OH, CN, carboxyalkyl, N-(R_7)(R_8), where R_7 and R_8 are selected from H, lower alkyl (1-4C), cycloalkyl, aryl, acyl, amido, or R_7 and R_8 may combine to form a saturated or unsaturated heterocylic ring and optionally substituted with up to 3 additional heteroatoms selected from N, O, and S; or
-NH-heterocycle, where the heterocycle is represented by thiazole, oxazole, isoxazole, pyridine, pyrimidine, and purine and
where U and V are selected from H and O; and



when m is 2, Q is a spacer of from 2-10 carbons as a straight or branched, chiral or achiral, cyclic or acyclic, saturated or unsaturated, hydrocarbon group, such as phenyl.
In the most preferred embodiment of this invention,
X, Y, and Z are R_2-C=C-R_3, where R_2 and R_3 are H;
R is selected from H and halogen, preferably, F and Cl;
m is 1; and
Q is -N-(R_7)(R_8), where R_7 and R_8 are selected from H, acyl, amido, and R_7 and R_8 combine to form a saturated or unsaturated heterocyclic ring, optionally substituted with up to three heteroatoms selected from N, O, or S, for example, pyrrolidine, piperidine, pyrazole, imidazole, oxazole, isoxazole, tetrazole, azepine, etc., which may be optionally substituted with a lower alkyl or amino group.

2. A method according to Claim 1 wherein the X, Y, and Z are each R_2-C=C-R_3 (where R_2 and R_3 are H; R is selected from H and halogen, preferably, F and Cl); m

is 2; and Q is a spacer of from 2-10 carbons either as a straight or branched hydrocarbon chain, or containing a hydrocarbon ring.

3. A method according to Claim 1 wherein the compound is 1-[(2-chlorophenyl)diphenylmethyl]-1*H*-pyrazole.

4. A method according to Claim 1 wherein the compound is 1-[(2-fluorphenyl)diphenylmethyl]-1*H*-pyrazole.

5. A method according to Claim 1 wherein the compound is 1-[(4-chlorophenyl)diphenylmethyl]-1*H*-pyrazole.

6. A method according to Claim 1 wherein the compound is 1-[(2-fluorphenyl)diphenylmethyl]-1*H*-pyrazole .

7. A method according to Claim 1 wherein the compound is 1-[(2-chlorophenyl)diphenylmethyl]-1*H*-1,2,3,4-tetrazole.

8. A method according to Claim 1 wherein the compound is administered to the patient orally.

9. A method according to Claim 1 wherein the compound is administered to the patient by injection.

10. A method according to Claim 1 wherein the compound is administered to the patient transdermally.

11. A method according to Claim 1 wherein the compound is administered to the patient transmucosally.

12. A method according to Claim 1 wherein the compound is on or in an implantable device and wherein the compound is administered to the patient by implanting the device within the patient's body such that the compound elutes from the implanted device.

13. A method according to Claim 12 wherein the device comprises a stent.

14. A method according to Claim 13 wherein the stent is implanted in an artery of the patient such that a therapeutically effective amount of the compound elutes from the stent and deters reocclusion of the artery in which the stent is implanted.

15. A method according to Claim 13 wherein the stent is implanted in a coronary artery of the patient such that a therapeutically effective amount of the compound elutes from the stent and deters reocclusion of the coronary artery in which the stent is implanted.

16. A method according to Claim 1 wherein the compound is administered to a patient who has undergone or will undergo an angioplasty, atherectomy and/or stent implantation to treat an occluded blood vessel and wherein the compound is administered in an amount and by a route of administration that is effective to deter reocclusion of the blood vessel.

17. A method for deterring, inhibiting, preventing or reversing stenosis, restenosis or unwanted proliferation of cells in blood vessel walls or other anatomical structures of a human or veterinary patient, said method comprising the step of:

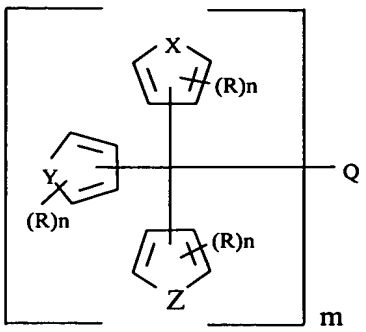
(A) inhibiting flux through or blocking Ca^{2+}-activated K^+ channels (K_{Ca}) so as to inhibit vascular smoth muscle cell proliferation.

18. A method according to Claim 17 wherein Step A comprises inhibiting or blocking the IKCal Ca^{2+}-activated K^+ channel.

19. A method according to Claim 17 wherein Step A is carried out in a patient who has undergone, or who will undergo, an angioplasty procedure and/or stent implantation.

20. A method according to Claim 17 wherein Step A comprises administering to the patient a therapeutically effective amount of a compound having the structural

formula:



Wherein,
X,Y and Z are same or different and are independently selected from CH2, O, S, NR_1, N=CH, CH=N and R_2-C=C-R_3, where R_2 and R_3 are H or may combine to form a saturated or unsaturated carbocyclic or heterocyclic ring, optionally substituted with one or more R groups;

R_1 is selected from H, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, acyl and aroyl, optionally substituted with hydroxy, amino, substituted amino, cyano, alkoxy, halogen, trihaloalkyl, nitro, thio, alkylthio, carboxy and alkoxycarbonyl groups;

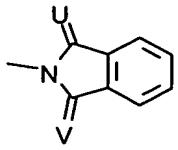
R is selected from H, halogen, trihaloalkyl, hydroxy, acyloxy, alkoxy, alkenyloxy, thio, alkylthio, nitro, cyano, ureido, acyl, carboxy, alkoxycarbonyl, N-(R_4)(R_5) and saturated or unsaturated, chiral or achiral, cyclic or acyclic, straight or branched hydrocarbyl group with from 1 to 20 carbon atoms, optionally substituted with hydroxy, halogen, trihaloalkyl, alkylthio, alkoxy, carboxy, alkoxycarbonyl, oxoalkyl, cyano and N-(R_4)(R_5) group,

R_4 and R_5 are selected from H, alkyl, alkenyl, alkynyl, cycloalkyl and acyl or R_4 and R_5 may combine to form a ring, wherein a carbon may be optionally substituted by a heteroatom selected from O, S or N-R_6,

R_6 is H, alkyl, alkenyl, alkynyl, cycloalkyl, hydroxyalkyl or carboxyalkyl,

n is 1-5; m is 1 or 2; with the proviso that
when m is 1, Q is selected from OH, CN, carboxyalkyl, N-(R_7)(R_8), where R_7 and R_8 are selected from H, lower alkyl (1-4C), cycloalkyl, aryl, acyl, amido, or R_7 and R_8 may combine to form a saturated or unsaturated heterocylic ring and optionally substituted with up to 3 additional heteroatoms selected from N, O, and S; or
-NH-heterocycle, where the heterocycle is represented by thiazole, oxazole, isoxazole, pyridine, pyrimidinè, and purine and

where U and V are selected from H and O; and



when m is 2, Q is a spacer of from 2-10 carbons as a straight or branched, chiral or achiral, cyclic or acyclic, saturated or unsaturated, hydrocarbon group, such as phenyl.
In the most preferred embodiment of this invention,
X, Y, and Z are R_2-C=C-R_3, where R_2 and R_3 are H;
R is selected from H and halogen, preferably, F and Cl;
m is 1; and
Q is -N-(R_7)(R_8), where R_7 and R_8 are selected from H, acyl, amido, and R_7 and R_8 combine to form a saturated or unsaturated heterocyclic ring, optionally substituted with up to three heteroatoms selected from N, O, or S, for example, pyrrolidine, piperidine, pyrazole, imidazole, oxazole, isoxazole, tetrazole, azepine, etc., which may be optionally substituted with a lower alkyl or amino group.

21. A method according to Claim 20 wherein the X, Y, and Z are each R_2-C=C-R_3 (where R_2 and R_3 are H; R is selected from H and halogen, preferably, F and Cl); m is 2; and Q is a spacer of from 2-10 carbons either as a straight or branched hydrocarbon chain, or containing a hydrocarbon ring.

22. A method according to Claim 20 wherein the compound is 1-[(2-chlorophenyl)diphenylmethyl]-1*H*-pyrazole.

23. A method according to Claim 20 wherein the compound is 1-[(2-fluorphenyl)diphenylmethyl]-1*H*-pyrazole .

24. A method according to Claim 20 wherein the compound is 1-[(4-chlorophenyl)diphenylmethyl]-1*H*-pyrazole .

25. A method according to Claim 20 wherein the compound is 1-[(2-fluorphenyl)diphenylmethyl]-1*H*-pyrazole .

26. A method according to Claim 20 wherein the compound is 1-[(2-chlorophenyl)diphenylmethyl]-1*H*-1,2,3,4-tetrazole.

27. A method according to Claim 20 wherein the compound is administered to the patient orally.

28. A method according to Claim 20 wherein the compound is administered to the patient by injection.

29. A method according to Claim 20 wherein the compound is administered to the patient transdermally.

30. A method according to Claim 20 wherein the compound is administered to the patient transmucosally.

31. A method according to Claim 20 wherein the compound is on or in an implantable device and wherein the compound is administered to the patient by implanting the device within the patient's body such that the compound elutes from the implanted device.

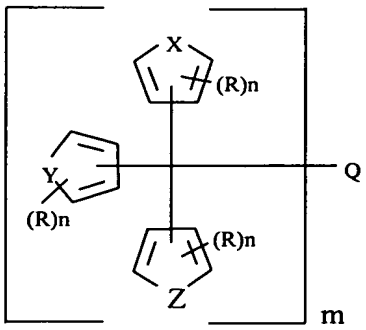
32. A method according to Claim 21 wherein the device comprises a stent.

33. A method according to Claim 32 wherein the stent is implanted in an artery of the patient such that a therapeutically effective amount of the compound elutes from the stent and deters reocclusion of the artery in which the stent is implanted.

34. A method according to Claim 32 wherein the stent is implanted in a coronary artery of the patient such that a therapeutically effective amount of the compound elutes from the stent and deters reocclusion of the coronary artery in which the stent is implanted.

35. A method according to Claim 20 wherein the compound is administered to a patient who has undergone or will undergo an angioplasty, atherectomy and/or stent implantation to treat an occluded blood vessel and wherein the compound is administered in an amount and by a route of administration that is effective to deter reocclusion of the blood vessel.

36. A device for implantation in a stenotic blood vessel, said device comprising, in an amount that is therapeutically effective to inhibit restenosis of the blood vessel, a compound having the structural formula:



Wherein,
X,Y and Z are same or different and are independently selected from CH2, O, S, NR_1, N=CH, CH=N and R_2-C=C-R_3, where R_2 and R_3 are H or may combine to form a saturated or unsaturated carbocyclic or heterocyclic ring, optionally substituted with one or more R groups;

R_1 is selected from H, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, acyl and aroyl, optionally substituted with hydroxy, amino, substituted amino, cyano, alkoxy, halogen, trihaloalkyl, nitro, thio, alkylthio, carboxy and alkoxycarbonyl groups;

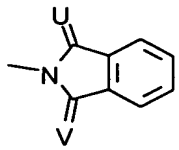
R is selected from H, halogen, trihaloalkyl, hydroxy, acyloxy, alkoxy, alkenyloxy, thio, alkylthio, nitro, cyano, ureido, acyl, carboxy, alkoxycarbonyl, N-(R_4)(R_5) and saturated or unsaturated, chiral or achiral, cyclic or acyclic, straight or branched hydrocarbyl group with from 1 to 20 carbon atoms, optionally substituted with hydroxy, halogen, trihaloalkyl, alkylthio, alkoxy, carboxy, alkoxycarbonyl, oxoalkyl, cyano and N-(R_4)(R_5) group,

R_4 and R_5 are selected from H, alkyl, alkenyl, alkynyl, cycloalkyl and acyl or R_4 and R_5 may combine to form a ring, wherein a carbon may be optionally substituted by a heteroatom selected from O, S or N-R_6,

R_6 is H, alkyl, alkenyl, alkynyl, cycloalkyl, hydroxyalkyl or carboxyalkyl,

n is 1-5; m is 1 or 2; with the proviso that
when m is 1, Q is selected from OH, CN, carboxyalkyl, N-(R_7)(R_8), where R_7 and R_8 are selected from H, lower alkyl (1-4C), cycloalkyl, aryl, acyl, amido, or R_7 and R_8 may combine to form a saturated or

unsaturated heterocylic ring and optionally substituted with up to 3 additional heteroatoms selected from N, O, and S; or
-NH-heterocycle, where the heterocycle is represented by thiazole, oxazole, isoxazole, pyridine, pyrimidine, and purine and
where U and V are selected from H and O; and



when m is 2, Q is a spacer of from 2-10 carbons as a straight or branched, chiral or achiral, cyclic or acyclic, saturated or unsaturated, hydrocarbon group, such as phenyl.
In the most preferred embodiment of this invention,
X, Y, and Z are R_2-C=C-R_3, where R_2 and R_3 are H;
R is selected from H and halogen, preferably, F and Cl;
m is 1; and
Q is -N-(R_7)(R_8), where R_7 and R_8 are selected from H, acyl, amido, and R_7 and R_8 combine to form a saturated or unsaturated heterocyclic ring, optionally substituted with up to three heteroatoms selected from N, O, or S, for example, pyrrolidine, piperidine, pyrazole, imidazole, oxazole, isoxazole, tetrazole, azepine, etc., which may be optionally substituted with a lower alkyl or amino group.

37. A device according to Claim 36 wherein the X, Y, and Z are each R_2-C=C-R_3 (where R_2 and R_3 are H; R is selected from H and halogen, preferably, F and Cl); m is 2; and Q is a spacer of from 2-10 carbons either as a straight or branched hydrocarbon chain, or containing a hydrocarbon ring.

38. A device according to Claim 36 wherein the compound is 1-[(2-chlorophenyl)diphenylmethyl]-1*H*-pyrazole.

39. A device according to Claim 36 wherein the compound is 1-[(2-fluorphenyl)diphenylmethyl]-1*H*-pyrazole.

40. A device according to Claim 36 wherein the compound is 1-[(4-chlorophenyl)diphenylmethyl]-1*H*-pyrazole.

41. A devidce according to Claim 36 wherein the compound is 1-[(2-fluorphenyl)diphenylmethyl]-1*H*-pyrazole.

42. A device according to Claim 36 wherein the compound is 1-[(2-chlorophenyl)diphenylmethyl]-1*H*-1,2,3,4-tetrazole.

43. A device according to Claim 36 wherein the device comprises a stent.

44. A device according to Claim 36 wherein the device comprises a stent-graft.

45. A device according to Claim 36 wherein the device is at least partially coated with a coating that contains the compound.

46. A device according to Claim 36 wherein the compound is associated with the device in a manner that causes the compound to elute from the device and into the wall of the blood vessel in which the device is implanted.